

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over a glass substrate;

crystallizing said semiconductor film; and

oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in a pressurized atmosphere at a pressure greater than one atmosphere up to 15 atmospheres and at a temperature lower than a strain point of said glass substrate.

2. (Canceled)

3. (Previously Presented) A method according to claim 1, wherein said oxidizing is performed in an oxidizing atmosphere.

4. (Previously Presented) A method according to claim 1, wherein said oxidizing is performed in an oxidizing atmosphere containing water vapor.

5. (Previously Presented) A method according to claim 1, wherein said temperature is in a range of 500 to 650°C.

6. (Previously Presented) A method according to claim 1, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

7. (Previously Presented) A method according to claim 1, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said oxidizing step.

8. (Previously Presented) A method according to claim 1, wherein said semiconductor device comprises an active matrix type display device.

9. (Previously Presented) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon on an insulating surface;

crystallizing said semiconductor film; and

oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in a pressurized atmosphere at a pressure greater than one atmosphere up to 15 atmospheres and at a temperature of 500 to 650°C.

10. (Canceled)

11. (Previously Presented) A method according to claim 9, wherein said oxidizing is performed in an oxidizing atmosphere.

12. (Previously Presented) A method according to claim 9, wherein said oxidizing is performed in an oxidizing atmosphere containing water vapor.

13. (Previously Presented) A method according to claim 9, wherein said oxidizing step is a pyrogenic oxidation process.

14. (Previously Presented) A method according to claim 9, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

15. (Previously Presented) A method according to claim 9, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said oxidizing step.

16. (Previously Presented) A method according to claim 9, wherein said semiconductor device comprises an active matrix type display device.

17. (Previously Presented) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over an alkali-free glass substrate;

crystallizing said semiconductor film; and

oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in a pressurized atmosphere at a pressure greater than one atmosphere up to 15 atmospheres and at a temperature lower than a strain point of said glass substrate.

18. (Canceled)

19. (Previously Presented) A method according to claim 17, wherein said oxidizing is performed in an oxidizing atmosphere.

20. (Previously Presented) A method according to claim 17, wherein said oxidizing is performed in an oxidizing atmosphere containing water vapor.

21. (Previously Presented) A method according to claim 17, wherein said temperature is in a range of 500 to 650°C.

22. (Previously Presented) A method according to claim 17, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

23. (Previously Presented) A method according to claim 17, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said oxidizing step.

24. (Previously Presented) A method according to claim 17, wherein said semiconductor device comprises an active matrix type display device.

25. (Previously Presented) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over a glass substrate;

crystallizing said semiconductor film;

forming an insulating film adjacent to said crystallized semiconductor film by plasma CVD; and

forming gate electrodes adjacent to said insulating film,

wherein said method further comprises a step of oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in a pressurized atmosphere at a pressure greater than one atmosphere up to 15 atmospheres and at a temperature lower than a strain point of said glass substrate.

26. (Canceled)

27. (Previously Presented) A method according to claim 25, wherein said gate electrodes are formed over said active layers.

28. (Previously Presented) A method according to claim 25, wherein said oxidizing is performed in an oxidizing atmosphere containing water vapor.

29. (Previously Presented) A method according to claim 25, wherein said temperature is in a range of 500 to 650°C.

30. (Previously Presented) A method according to claim 25, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

31. (Previously Presented) A method according to claim 25, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said oxidizing step.

32. (Previously Presented) A method according to claim 25, wherein said semiconductor device comprises an active matrix type display device.

33. (Previously Presented) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon on an insulating surface;

crystallizing said semiconductor film;

forming an insulating film adjacent to said crystallized semiconductor film by plasma CVD; and

forming gate electrodes adjacent to said insulating film,

wherein said method further comprises a step of oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in a pressurized atmosphere at a pressure greater than one atmosphere up to 15 atmospheres and at a temperature of 500 to 650°C.

34. (Canceled)

35. (Previously Presented) A method according to claim 33, wherein said gate electrodes are formed over said active layers.

36. (Previously Presented) A method according to claim 33, wherein said oxidizing is performed in an oxidizing atmosphere containing water vapor.

37. (Previously Presented) A method according to claim 33, wherein said oxidizing step is a pyrogenic oxidation process.

38. (Previously Presented) A method according to claim 33, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

39. (Previously Presented) A method according to claim 33, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said oxidizing step.

40. (Previously Presented) A method according to claim 33, wherein said semiconductor device comprises an active matrix type display device.

41. (Previously Presented) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over an alkali-free glass substrate;

crystallizing said semiconductor film;

forming an insulating film adjacent to said crystallized semiconductor film by plasma CVD; and

forming gate electrodes adjacent to said insulating film,
wherein said method further comprises a step of oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in a pressurized atmosphere at a temperature lower than a strain point of said glass substrate.

42. (Canceled)

43. (Previously Presented) A method according to claim 41, wherein said gate electrodes are formed over said active layers.

44. (Previously Presented) A method according to claim 41, wherein said oxidizing is performed in an oxidizing atmosphere containing water vapor.

45. (Previously Presented) A method according to claim 41, wherein said temperature is in a range of 500 to 650°C.

46. (Previously Presented) A method according to claim 41, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

47. (Previously Presented) A method according to claim 41, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said oxidizing step.

48. (Previously Presented) A method according to claim 41, wherein said semiconductor device comprises an active matrix type display device.

49. (Currently Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over a glass substrate;
crystallizing said semiconductor film; and
oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in a pressurized atmosphere at a pressure greater than one atmosphere up to 15 atmospheres; and, for electrically isolating said plurality of thin film transistors from one another,

wherein said oxidizing the semiconductor film is performed in a temperature lower than a strain point of said glass substrate.

50. (Previously Presented) A method according to claim 49, wherein said strain point of said substrate is 750°C or less.

51. (Previously Presented) A method according to claim 49, wherein said oxidizing atmosphere contains water vapor.

52. (Previously Presented) A method according to claim 49, wherein said temperature is in a range of 500 to 650°C.

53. (Previously Presented) A method according to claim 49, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

54. (Previously Presented) A method according to claim 49, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said heating step.

55. (Previously Presented) A method according to claim 49, wherein said semiconductor device comprises an active matrix type display device.

56. (Currently Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:
forming a semiconductor film comprising silicon on an insulating surface;
crystallizing said semiconductor film; and
oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in a pressurized atmosphere at a pressure greater than one atmosphere up to 15 atmospheres; and, and for electrically isolating said plurality of thin film transistors from one another,

wherein said oxidizing the semiconductor film is performed in a temperature of 500 to 650°C.

57. (Previously Presented) A method according to claim 56, wherein said crystallizing step is performed at a temperature of 600°C.

58. (Previously Presented) A method according to claim 56, wherein said oxidizing atmosphere contains water vapor.

59. (Previously Presented) A method according to claim 56, wherein said oxidizing step is a pyrogenic oxidation process.

60. (Previously Presented) A method according to claim 56, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

61. (Previously Presented) A method according to claim 56, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said heating step.

62. (Previously Presented) A method according to claim 56, wherein said semiconductor device comprises an active matrix type display device.

63. (Previously Presented) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over an alkali-free glass substrate;

crystallizing said semiconductor film; and

oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in pressurized atmosphere at a pressure greater than one atmosphere up to 15 atmospheres; and, for electrically isolating said plurality of thin film transistors from one another,

wherein said oxidizing the semiconductor film is performed in a temperature lower than a strain point of said glass substrate.

64. (Previously Presented) A method according to claim 63, wherein said strain point of said substrate is 750°C or less.

65. (Previously Presented) A method according to claim 63, wherein said oxidizing atmosphere contains water vapor.

66. (Previously Presented) A method according to claim 63, wherein said temperature is in a range of 500 to 650°C.

67. (Previously Presented) A method according to claim 63, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

68. (Previously Presented) A method according to claim 63, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said heating step.

69. (Previously Presented) A method according to claim 63, wherein said semiconductor device comprises an active matrix type display device.

70. (Previously Presented) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over a glass substrate;

crystallizing said semiconductor film;

forming an insulating film adjacent to said crystallized semiconductor film; and

forming gate electrodes adjacent to said insulating film,

wherein said method further comprises a step of oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in a pressurized atmosphere at a pressure greater than one atmosphere up to 15 atmospheres; and

wherein said oxidizing the semiconductor film is performed in a temperature lower than a strain point of said glass substrate.

71. (Previously Presented) A method according to claim 70, wherein said strain point of said substrate is 750°C or less.

72. (Previously Presented) A method according to claim 70, wherein said gate electrodes are formed over said active layers.

73. (Previously Presented) A method according to claim 70, wherein said oxidizing atmosphere contains water vapor.

74. (Previously Presented) A method according to claim 70, wherein said temperature is in a range of 500 to 650°C.

75. (Previously Presented) A method according to claim 70, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

76. (Previously Presented) A method according to claim 70, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said oxidizing step.

77. (Previously Presented) A method according to claim 70, wherein said semiconductor device comprises an active matrix type display device.

78. (Previously Presented) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon on an insulating surface;

crystallizing said semiconductor film;

forming an insulating film adjacent to said crystallized semiconductor film; and

forming gate electrodes adjacent to said insulating film,

wherein said method further comprises a step of oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in a pressurized atmosphere at a pressure greater than one atmosphere up to 15 atmospheres; and
wherein said oxidizing the semiconductor film is performed in a temperature of 500 to 650°C.

79. (Previously Presented) A method according to claim 78, wherein said crystallizing step is performed at a temperature of 600°C.

80. (Previously Presented) A method according to claim 78, wherein said gate electrodes are formed over said active layers.

81. (Previously Presented) A method according to claim 78, wherein said oxidizing atmosphere contains water vapor.

82. (Previously Presented) A method according to claim 78, wherein said oxidizing step is a pyrogenic oxidation process.

83. (Previously Presented) A method according to claim 78, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

84. (Previously Presented) A method according to claim 78, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said oxidizing step.

85. (Previously Presented) A method according to claim 78, wherein said semiconductor device comprises an active matrix type display device.

86. (Previously Presented) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over an alkali-free glass substrate;

crystallizing said semiconductor film;

forming an insulating film adjacent to said crystallized semiconductor film; and

forming gate electrodes adjacent to said insulating film,

wherein said method further comprises a step of oxidizing the crystallized semiconductor film to be active layers of said thin film transistors in a pressurized atmosphere at a pressure greater than one atmosphere up to 15 atmospheres; and wherein said oxidizing the semiconductor film is performed in a temperature lower than a strain point of said glass substrate.

87. (Previously Presented) A method according to claim 86, wherein said strain point of said substrate is 750°C or less.

88. (Previously Presented) A method according to claim 86, wherein said gate electrodes are formed over said active layers.

89. (Previously Presented) A method according to claim 86, wherein said oxidizing atmosphere contains water vapor.

90. (Previously Presented) A method according to claim 86, wherein said temperature is in a range of 500 to 650°C.

91. (Previously Presented) A method according to claim 86, wherein said semiconductor film has a thickness of 100 to 1,000 Å.

92. (Previously Presented) A method according to claim 86, wherein at least one region of the semiconductor film is completely oxidized to a bottom surface of the semiconductor film during said oxidizing step.

93. (Previously Presented) A method according to claim 86, wherein said semiconductor device comprises an active matrix type display device.

94. (Previously Presented) A method according to claim 1, wherein said strain point of said substrate is 750°C or less.

95. (Previously Presented) A method according to claim 17, wherein said strain point of said substrate is 750°C or less.

96. (Previously Presented) A method according to claim 25, wherein said strain point of said substrate is 750°C or less.

97. (Previously Presented) A method according to claim 41, wherein said strain point of said substrate is 750°C or less.

98. (Previously Presented) A method according to claim 1, wherein said oxidizing step is a pyrogenic oxidation process.

99. (Previously Presented) A method according to claim 17, wherein said oxidizing step is a pyrogenic oxidation process.

100. (Previously Presented) A method according to claim 25, wherein said oxidizing step is a pyrogenic oxidation process.

101. (Previously Presented) A method according to claim 41, wherein said oxidizing step is a pyrogenic oxidation process.

102. (Previously Presented) A method according to claim 49, wherein said oxidizing step is a pyrogenic oxidation process.

103. (Previously Presented) A method according to claim 63, wherein said oxidizing step is a pyrogenic oxidation process.

104. (Previously Presented) A method according to claim 70, wherein said oxidizing step is a pyrogenic oxidation process.

105. (Previously Presented) A method according to claim 86, wherein said oxidizing step is a pyrogenic oxidation process.

106. (Previously Presented) A method according to claim 1, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.

107. (Previously Presented) A method according to claim 9, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.

108. (Previously Presented) A method according to claim 17, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.

109. (Previously Presented) A method according to claim 25, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.

110. (Previously Presented) A method according to claim 33, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.

111. (Previously Presented) A method according to claim 41, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.

112. (Previously Presented) A method according to claim 49, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.

113. (Previously Presented) A method according to claim 56, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.

114. (Previously Presented) A method according to claim 63, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.

115. (Previously Presented) A method according to claim 70, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.

116. (Previously Presented) A method according to claim 78, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.

117. (Previously Presented) A method according to claim 86, wherein an exposed surface of said crystallized semiconductor film is oxidized by said oxidizing.